MARKET TRANSFORMATION OF ENERGY EFFICIENT APPLIANCES IN TURKEY
Background

With its fast growing economy in recent years, Turkey has been a significant production base in many industrial sectors including production of household appliances, ranking first in Europe and second in the world with its Turkish manufacturers as well manufacturing facilities of worldwide leading manufacturers. This industrial development also led to an increase in domestic sales of energy using products, contributing to increase total electricity consumption and associated CO₂ emissions in Turkey. Total electricity consumption in Turkey reached 172 TWh in 2010, rising from 130 TWh in 2005. The residential sector represents nearly 25% of total electricity consumption, with household consumption at 31 TWh in 2005, rising to 42 TWh in 2010. It is forecast to reach 64 TWh by 2020. All these facts led General Directorate for Renewable Energy (GDRE) to launch a market transformation programme by means of Global Environment Facility (GEF) funded Market Transformation of Energy Efficient Appliances in Turkey Project with UNDP to ensure the market governed by more efficient appliances by phasing out less efficient ones.

Turkey has officially adopted its National Energy Efficiency Strategy Document which aims to reduce the energy intensity of the economy (per GDP) by 20% by 2023 compared to that in 2011 with energy efficiency focusing on industry and services, buildings, appliances, power generation and transport, and thus strengthening supply security in energy, to reduce the risks of import dependency, to minimize costs, to combat climate change and to protect the environment. In achieving this reduction, the energy efficiency strategy document identified a set of policy instruments including adoption of minimum energy performance standards (MEPSs), regulations on building energy performance, vehicles fuel efficiency, energy audits of industrial facilities and buildings, public awareness raising, etc.

Actual implementation phase of Market Transformation of Energy Efficient Appliances in Turkey project coincided with extensive adoption of minimum energy performance regulations via publication of eco-design implementing measures under eco-design framework directive as well as extensive revision (recasting) of interconnected framework energy labelling directive and implementing directives thereunder and publication of additional and Delegated Acts under new energy labelling framework directive in the European Union (EU) which Turkey is obliged to transpose and implement pursuant to Customs Union between Turkey and the EU and to ensure alignment with Acquis Communautaire on the way towards EU Accession.

Additionally, Turkey had no market monitoring tool to monitor energy consumption and GHG emission figures caused by household appliances.

Ministry of Science, Industry and Technology (MoSIT) is the market surveillance authority to check compliance of household appliances on the market with applicable energy labelling regulations in force in Turkey. It is mostly focused on product safety aspects with less emphasis on energy labelling requirements, i.e. most of the product inspections to check compliance with energy labelling regulations focused on existence of energy label only.
There is lack of testing facilities in Turkey (limited facilities for some product groups including refrigerators, electric ovens and TVs and no facilities for some other product groups including air conditioners and wet products) to verify the energy classes and resource consumption figures claimed by the manufacturers on energy labels for market surveillance purposes. Therefore market surveillance is made by MoSIT under energy labelling regulations focusing on proper energy labelling only.

From the level of awareness of supply chain and consumers regarding energy efficiency of appliances, before the actual implementation Market Transformation of Energy Efficient Appliances in Turkey Project, the major Turkish appliance manufacturers are highly aware of energy efficiency aspects and compliance with energy labelling requirements as they mostly export their products to the EU Member States and tend to keep their position against their major worldwide competitors. However, the sales staff and the consumers were not quite aware of energy efficiency aspects to guide their customers to, and prefer, more efficient appliances respectively.

Objective and Outcomes

The overall objective of the GEF-funded Market Transformation of Energy Efficient Appliances in Turkey project executed by General Directorate for Renewable Energy is to reduce the household electricity consumption and the associated GHG emissions of Turkey by accelerating the market transformation of less energy consuming building appliances. This is being facilitated by:

- Strengthening the local institutional capacity to develop, adopt and implement effective appliance EE policies;
- Developing and implementing a structured compliance checking and enforcement programme for appliance energy performance labels and standards;
- increasing consumer and the supply chain awareness and capacity to purchase / deliver energy efficient appliances in the Turkish market; and
- analysing and reporting the results of the project for further learning, adaptive management and, as applicable, replication in other countries.

What has been done?

- Improvement of regulatory framework regarding energy labelling and eco-design requirements to ensure a better regulatory framework for targeted market transformation. The project accelerated transposition and publication of legislation in Turkey. Two implementing Communiqués on Eco-design Requirements for energy related products (Dishwashers and Washing Machines) and five implementing Communiqués on Energy Labelling of energy related products (Dishwashers, Washing Machines, Refrigerators, Air Conditioners, TVs) have been entered into force through project.

- Development of a market monitoring system to monitor energy consumption and GHG emissions caused by household appliances. Considering the fact that the Ministry of Energy and Natural Resources (MoENR) had no market monitoring tool to monitor energy consumption and GHG emission figures caused by household appliances, it was very important for MoENR to have such a tool in order to monitor, evaluate the energy consumption and GHG emission figures caused by appliances to better elaborate national energy efficiency policies. For this purpose, various stakeholder meetings have been conducted in August 2011 to analyse the data availability and find out gaps and additional data requirements to come up with a sound market monitoring database. As a result a database has been developed and finalized in
May 2012, including necessary data collected from project partners and relevant stakeholders including Turkish White Goods Manufacturers’ Association (TURKBESD) and Turkish Statistics Agency (TurkStat) as well as best estimations where it was impossible to collect required data. Moreover, staff of GDRE was also trained in April 2012 on operation and maintenance of this database as it should be updated every year to always have the most up-to-date data regarding energy consumption and GHG emissions. This has been one of the remarkable results of the project as the GDRE had no concrete tool to monitor energy consumption and GHG emissions from household appliances to better elaborate its energy efficiency policies particularly in the field of appliances.

- **Training of MoSIT HQ staff and field inspectors on enforcement of eco-design and energy labelling regulations.** 300 people composed of both HQ staff and field inspectors of MoSIT who are responsible for market surveillance of products have been trained on enforcement of EU eco-design and energy labelling regulations. This training was given to MoSIT HQ staff who conduct regular in-service training for field inspectors to ensure sustainability of project results after completion of the project, and for field inspectors to raise awareness of inspectors all over Turkey for product inspections under upcoming eco-design and energy labelling regulations.

- **Laboratory Inventory.** A set of stakeholder meetings and visits was paid to assess the capacity of both governmental and private sector laboratories regarding energy efficiency testing of appliances, as a first step of the activities aimed at developing a structured enforcement and verification programme with adequately trained staff and other resources. In this context, the stakeholder meetings were held with MoSIT, TSE, conformity assessment bodies, Turkish Accreditation Agency (TURKAK) and manufacturers. The laboratory visits covered Ankara and Gebze facilities of TSE, manufacturers’ laboratories. As a result, a report including the EU conformity assessment practices and the inventory of laboratory facilities in Turkey was produced. This report also offered different options for upgrading the testing facilities in Turkey for market surveillance purposes. Among these options the MoSIT, as the market surveillance authority in Turkey, decided to start with testing all products in manufacturers’ laboratories and/or elsewhere in the EU and end up with upgrading TSE facilities and testing all products at TSE facilities.
Proactive Market Surveillance Plan (PMSP) and Laboratory Investment Plan. A Proactive Market Surveillance and a Laboratory Investment Plan for TSE in cooperation with the MoSIT have been developed. As a result of prolonged discussions between relevant institutions, TSE finally delivered their commitment in February 2013 to implement the Laboratory Investment Plan to develop wet products (washing machines, dishwashers and tumble driers) and air conditioner testing laboratories in their Ankara and Istanbul Pendik Campuses. The PMSP has been a first for the MoSIT, as their annual Market Surveillance Plans always focused on product safety and existence of energy label on products only. With implementation of this PMSP, the MoSIT will for the first time implement a market screening programme complete with testing services. Since the MoSIT is the market surveillance authority in Turkey and TSE is the authorized testing body of the ministry, better and fairer market surveillance activities and testing will be for the benefit of the industry to avoid unfair competition on the market. The training programme, when supported by the industry, will contribute improvement of market surveillance and testing infrastructure in Turkey. As a result, both TSE and major Turkish manufacturers took part in and implemented the training programme, working group meetings were held for each product group to finalize the list of testing equipment of TSE and completed working group meetings and training of TSE staff.

Consumer Awareness Survey. In order to identify the level of awareness of consumers regarding energy efficiency of appliances, a consumer survey was conducted in April 2012. This survey mainly provided the results such as;

- females are more aware than males about energy efficiency in both rural and urban settlements;
- about 52% of the Turkish population claim awareness of energy labelling;
- the level of awareness about climate change is relatively high but the impacts by householders on climate change by for example purchasing in-efficient home appliances could not be positively correlated;
- financial support mechanisms are necessary to accelerate the phase-out of old and inefficient appliances.

Training of Sales Staff. The consumer awareness survey also noted that most of the Turkish people buy appliances after they physically see and check them at stores. The survey found that only 2–2.5% of them were informed of the energy efficiency aspects by salespersons in–store. Based on these results, a training programme was designed and delivered which targeted the salespersons of TURKBESD members as well as department stores who directly communicate with customers and staff working in marketing and sales departments of TURKBESD members. The trainings covered the responsibilities of suppliers and dealers under the energy labelling regulations, about the information contained on the energy label and about sales techniques to highlight the energy efficiency properties of appliances.

Public Awareness Campaign. Based on the results of the consumer awareness survey, TV spots were broadcasted and published in national TV channels. In addition, energy label flyers were printed to be disseminated in appliance shops and department stores to inform consumers about the symbols and information presented on energy labels and to correctly guide them when buying and using appliances. A project website has also been designed and launched in June 2012 to promote the project and project objectives.
Results and Impacts

- Transposition of EU eco-design and energy labelling regulations: Having necessary regulatory instruments in place is the most important step for regulating the market. For this purpose, the following regulations were transposed and published in Turkish Official Gazette:

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<th>Regulations</th>
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<tr>
<td><strong>2009/125/EC Framework Eco-design Directive</strong></td>
<td><strong>September 2011</strong></td>
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<tr>
<td>642/2009 – Televisions</td>
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<td>643/2009 – Refrigerating appliances</td>
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<td>1015/2010 – Washing Machines</td>
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<td>1016/2010 – Dishwashers</td>
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<td>206/2012 – Air Conditioners</td>
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<td><strong>2010/30/EU Framework Labelling Directive</strong></td>
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<td>1060/2010 – Refrigerators</td>
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<td>1061/2010 – Washing Machines</td>
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<td>392/2012 – Tumble Driers</td>
<td>May 2013</td>
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<td>626/2011 – Air conditioners</td>
<td>FINAL DRAFT</td>
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- Market Monitoring System: An important tool for Turkish government to monitor energy consumption and GHG emissions from household appliances to elaborate its energy efficiency policies particularly in the field of appliances more precisely.

- Proactive Market Surveillance Plan (PMSP): This plan has been a first for the MoSIT, as their annual Market Surveillance Plans always focused on product safety and existence of energy label on products only. With implementation of this PMSP, the MoSIT will for the first time implement a market screening programme complete with testing services. Based on the results of this PMSP, MoSIT will design and implement their future market surveillance programmes under eco-design and energy labelling regulations more effective and complete with testing services.
Laboratory Investment by TSE: Commitment of TSE to invest nearly 1,500,000 USD in wet products and air conditioner testing laboratories means leveraging more than 1,000,000 USD additional finance under this project. Once completed, this investment will enable MoSIT to give more focus on energy labelling and eco-design aspects and run their future market surveillance programmes complete with testing services. Besides, consumers will be able to buy these products with more reliably as the manufacturers will be more careful when placing their products on the market always keeping in mind that their products will be more probably be tested for compliance with energy labelling and eco-design regulations. Upgrading of TSE facilities will also enable TSE to compete in international conformity assessment market for energy efficiency tests.

Training of MoSIT Market Inspectors: 300 staff of MoSIT all over the country have been trained on eco-design and energy labelling regulations for the first time. This will enable MoSIT to give more focus on energy efficiency in their market surveillance activities by provincial offices of MoSIT.

Training of Sales Staff: Inclusion of a train-the-trainers concept and backed up with the results of the first phase, training programme reached to 40,000 – 50,000 salespersons all over Turkey.

Public Awareness Raising Campaign. From the consumer’s perspective, the new eco-design and energy labelling regulations shifted up the energy efficiency level of the appliance market for the benefit of consumers which means about 20% to 50% reduction in their electricity bills. Additionally, the public awareness raising campaign on most prominent TV channels highlighting energy labels and climate change relevance of appliances ensured that the consumers became more aware about the labels and energy efficiency and climate change aspects of the appliances both of which were not properly highlighted in Turkey before this project. This campaign reached 9,252,000 people through various TV channels and more people have been reached via social media. 10,000 flyers distributed in appliance shops and department stores to inform consumers about the symbols and on energy labels. The post-campaign consumer awareness survey also confirmed the success of the public awareness raising campaign indicating that the level of awareness has been increased in all categories (e.g. male/female, urban/rural, correlation of appliance energy consumption with climate change, correct information on energy labels, etc.). The level of awareness on energy efficiency increased from 43.5% to 58.6%, awareness on energy labels from 52.5% to 58.2% and priority of energy efficiency in purchase decision making shifted from third level to the first level. Nearly half of the people was impressed and influenced by the message of the public awareness raising campaign on TV.

Conclusion

All above listed results provided energy savings of 730 GWh corresponding to a GHG reduction of about 450,000 tCO₂ by the midway of the project implementation, and these figures are expected to reach about 3700 GWh and 2.4 mtCO₂ respectively by the end of the project.

Market transformation aspects of the project are concerned, the most important component and starting point for a successful market transformation is the improvement of regulatory framework in agreement with local manufacturers. In the case of Turkey, Customs Union as well as existence of worldwide reputable manufacturers in Turkey became an important driving force for an accelerated market transformation. These facts led Turkey to adopt MEPS more rapidly, and ensured completion of transformation of products on the market within about 1.5 or 2 years and considering the average service life of appliances, it is expected to achieve full market transformation in 10 years. However, the cost of such transformation depends on many factors like whether the country has a significant appliance manufacturing industry, size of manufacturing industry, international trade relations, level of awareness of supply chain and consumers, etc.

Finally, the achievements of Market Transformation of Energy Efficient Appliances in Turkey Project in Turkey is considered to be a good example for the least developed countries (LDC) where no or little energy efficiency related legislation is in place and no market transformation movement has been launched so far.